

PTO/SB/17 (01-08)

Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Effective on 12/08/04. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818). FEE TRANSMITTAL For FY 2006		Complete if Known Application Number Fathi Hassan Ghorbel Filing Date December 8, 2003 First Named Inventor Fathi Hassan Ghorbel Examiner Name R. J. McCarry Jr. Art Unit 3617 Attorney Docket No. 1789-08603	
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		RECEIVED CENTRAL FAX CENTER MAR 13 2006	
TOTAL AMOUNT OF PAYMENT (\$ 250)			

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: **03-2769** Deposit Account Name: **Conley Rose, P.C.**

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayments of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fees Paid (\$)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee (\$)	Small Entity Fee (\$)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)	Multiple Dependent Claims	Fee (\$)	Fee Paid (\$)
_____ - 20 or HP = _____	x _____	= _____		_____		
HP = highest number of total claims paid for, if greater than 20						
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)			
_____ - 3 or HP = _____	x _____	= _____				
HP = highest number of independent claims paid for, if greater than 3						

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	/ 50 = _____	(round up to a whole number) x _____	= _____	

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount).

Other (e.g., late filing surcharge): Appeal Brief

Fees Paid (\$)

\$250

SUBMITTED BY

Signature		Registration No. (Attorney/Agent)	36,962	Telephone	(713) 238-8000
Name (Print/Type)	Marcella D. Watkins	Date	March 13, 2006		

170921.011789 08603

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

RECEIVED
CENTRAL FAX CENTER

MAR 13 2006

FAX TRANSMITTAL COVER SHEET

TO: U. S. Patent and Trademark Office
Attn: Mail Stop APPEAL Examiner R.J. McCarry, Jr.

FAX NO.: (571) 273-8300

DATE: March 13, 2006

FROM: Marcella D. Watkins 36,962

Conley Rose, P.C.

7100 JPMorgan Chase Tower

600 Travis Street

Houston, Texas 77002-2912

TELEPHONE: (713) 238-8000

FAX: (713) 238-8008

CLIENT NO.: 1789-08603

TOTAL NUMBER OF PAGES (INCLUDING THIS ONE) 16

COMMENTS: Re: U.S. Patent Application Serial No. 10/730,233
Applicant: Fathi Hassan Ghorbel et al.

The following documents are attached for filing:
Fee Transmittal (1 p.); Appeal Brief (14 p.)

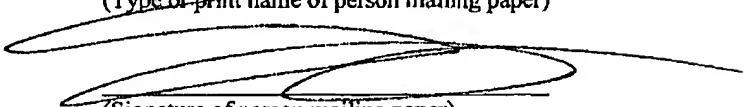
CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this paper (along with any referred to as being attached or enclosed) is being sent by facsimile transmission on the date shown below to (571) 273-8300 (fax number), the U.S. Patent and Trademark Office, in accordance with 37 CFR § 1.6(d).

Sandra K. Begley

(Type or print name of person mailing paper)

Date: March 13, 2006



(Signature of person mailing paper)

This facsimile and the information it contains is intended to be a confidential communication only to the person or entity to whom it is addressed. If you have received this facsimile in error, please notify us by telephone.

170918.01/1789.08603

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

RECEIVED
CENTRAL FAX CENTER

MAR 13 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Fathi Hassan Ghorbel et al.	§	Confirmation No.:	2522
Serial No.:	10/730,233	§	Group Art Unit:	3617
Filed:	December 8, 2003	§	Examiner:	R. J. McCarry Jr.
For:	Autonomous Robotic Crawler for In-Pipe Inspection	§	Docket No.:	1789-08603
		§		

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Date: March 13, 2006

Sir:

Appellant hereby submits this Appeal Brief in connection with the above-identified application. A Notice of Appeal was filed via facsimile on January 11, 2006.

03/15/2006 EFLORES 00000128 032769 10730233

01 FC:2402 250.00 DA

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

TABLE OF CONTENTS

I.	REAL PARTY IN INTEREST	3
II.	RELATED APPEALS AND INTERFERENCES.....	3
III.	STATUS OF THE CLAIMS	3
IV.	STATUS OF THE AMENDMENTS.....	3
V.	SUMMARY OF THE CLAIMED SUBJECT MATTER.....	4
VI.	GROUND OF REJECTION TO BE REVIEWED ON APPEAL.....	4
VII.	ARGUMENT	5
	Claims 1-6, 11, and 12	5
	Claims 15-19 and 24	5
VIII.	CLAIMS APPENDIX.....	8
IX.	EVIDENCE APPENDIX.....	13
X.	RELATED PROCEEDINGS APPENDIX	14

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

I. REAL PARTY IN INTEREST

The real party in interest is the William Marsh Rice University ("Rice"), a non-profit university, having its principal place of business in Houston, Texas. The Assignment from the inventor to Rice was recorded on May 10, 2004, at Reel/Frame 014614/0805.

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

Originally filed claims: 1-26.
Claim cancellations: 2.
Added claims: None.
Presently pending claims: 1 and 3-26.
Presently allowed claims: 7-10 and 20-23.
Presently objected to claims
(allowable if rewritten in
independent form): None.

Presently appealed claims: 1-6, 11-19, and 24-26.

IV. STATUS OF THE AMENDMENTS

An After-Final amendment was submitted on November 10, 2005. The After-Final amendment was not entered.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

In accordance with at least one embodiment of the invention, a robotic pipe crawler is disclosed. An exemplary embodiment of a pipe crawler is shown in Figure 1 and described in the associated text in at least pages 4-6 of Appellant's disclosure. The autonomous robot comprises:

a first section having a plurality of pitched wheels that are each positioned at a different point along the length of the robot;

a second section rotatably connected to said first section and having a plurality of wheels aligned parallel to the longitudinal axis of the conduit; and

means for causing rotation of one of said first and second sections relative to the other of said first and second sections.

Because of the presence of the pitched and non-pitched wheels on their respective sections, relative rotation of the first and second sections causes the robot to advance within a pipe.

In some embodiments, at least one wheel is moveable between a first position in which all of the wheels on the same section contact the conduit and a second position in which at least one of said of the wheels is retracted.

In other embodiments, at least one component of the robot has an outer diameter that substantially corresponds to the inside surface of the conduit and the robot includes at least one internal passageway that allows fluid to flow along the length of the robot without having to pass between said at least one component and the inside surface of the conduit.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-6, 11, 12, 15-19 and 24 are anticipated under 35 U.S.C. § 102(b) by Simpson (U.S. Pat. No. 5,649,603).

Whether claims 13, 14, 25 and 26 are obvious under 35 U.S.C. § 103(a) over Simpson in view of Ng et al. (U.S. Pat. No. 6,162,171).

The Examiner concluded that claims 7-10 and 20-23 contain allowable subject matter and thus such claims are not at issue in this appeal.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

VII. ARGUMENT

The appealed claims stand or fall together.

Claims 1-6, 11, and 12

Appellant has grouped these claims together for purpose of this appeal. However, that these claims have been grouped together should not be used to construe the scope of the claims or the limitations contained therein. Differences in scope and limitation meaning may exist apart from the issues raised in this appeal. Appellant selects independent claim 1 as representative of this group.

Claim 1 requires that each of the pitched wheels be positioned at a different point along the length of the robot. In support of his assertion that Simpson anticipates claim 1, the Examiner states:

Sets of pitched wheels are positioned at different points along the length of the vehicle. As shown in Figure 10, there is a set of wheels on section 808 and another set on section 812. On each section 808 and 812, the wheels are positioned at different points around the axis of the vehicle. The wheels are also positioned in the same azimuthal position about the vehicle.

Notably, the Examiner does not state that Simpson includes pitched wheels that are each positioned at a different point along the length of the robot, as required by claim 1. This is because Simpson teaches only sets of pitched wheels, i.e. groups of two or more pitched wheels that are positioned at the same axial location. All of the wheels of Simpson are grouped in sets and all of the wheels in each set are positioned at the same point along the length of the robot. Thus, Simpson clearly cannot support an anticipation rejection. For these reasons, the Examiner erred in rejecting claim 1 over Simpson.

The Examiner also used Simpson to reject some of the claims as obvious. Ng does not satisfy the deficiencies of Simpson explained herein. Based on the foregoing, Appellant respectfully submits that the rejections of the claims in this first grouping be reversed, and the claims set for issue.

Claims 15-19 and 24

Appellant has grouped these claims together for purpose of this appeal. However, that these claims have been grouped together should not be used to construe the scope of the claims or the limitations contained therein. Differences in scope and limitation

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

meaning may exist apart from the issues raised in this appeal. Appellant selects independent claim 15 as representative of this group.

Independent claim 15 requires that each of the pitched wheels be positioned at a different point along the length of the robot. As explained above, none of the cited art discloses of this limitation. For at least this reason, the Examiner erred in rejecting claim 15. Based on the foregoing, Appellant respectfully submits that the rejections of the claims in this second grouping be reversed, and the grouping set for issue.

The Examiner also used Simpson to reject claims 16-19 and 24 as obvious. Ng does not satisfy the deficiencies of Simpson explained herein. Based on the foregoing, Appellant respectfully submits that the rejections of the claims in this first grouping be reversed, and the claims set for issue.

Interview and After-final Amendment

Because Appellants believe that the pending claims are clearly distinguishable over the art of record, Appellants submitted an after-final amendment intended to emphasize the distinctions over the art. Upon submitting this amendment, however, Appellants were advised that it would not be entered on the ground that it is redundant. Appellants agree that it is redundant.


Appellants respectfully submit that the claims in the present form, i.e. without the after-final amendment, are distinguishable and patentable over the art.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

Conclusion

For the reasons stated above, Appellant respectfully submits that the Examiner erred in rejecting all pending claims. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Deposit Account No. 03-2769.

Respectfully submitted,



Marcella D. Watkins
Reg. No. 36,962
CONLEY ROSE, P.C.
(713) 238-8000 (Phone)
(713) 238-8008 (Fax)
ATTORNEY FOR APPELLANT

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

VIII. CLAIMS APPENDIX

1. (Currently amended) An autonomous robot for traversing a conduit comprising:
 - a first section having a plurality of pitched wheels, said pitched wheels being oriented such that each of their axes defines a pitch angle greater than zero degrees and less than ninety degrees with respect to the longitudinal axis of the conduit each of said pitched wheels being positioned at a different point along the length of the robot;
 - a second section rotatably connected to said first section, said second section having a plurality of wheels aligned parallel to the longitudinal axis of the conduit; and
 - means for causing rotation of one of said first and second sections relative to the other of said first and second sections;
 - wherein said relative rotation of said first and second sections provides locomotive motion of the robot.
2. Canceled.
3. (Currently amended) The robot according to claim 1 wherein each of said pitched wheels ~~is are~~ positioned at a different azimuthal position ~~points~~ about the axis of the robot.
4. The robot according to claim 1 wherein at least two of said pitched wheels are positioned at the same azimuthal position about the axis of the robot.
5. The robot according to claim 1 wherein said pitched wheels define at least one helical row.
6. The robot according to claim 5 wherein adjacent pitched wheels are spaced 180 degrees apart about the axis of the robot.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

7. (Currently amended) An autonomous robot for traversing a conduit comprising:
a first section having a plurality of pitched wheels, said pitched wheels
being oriented such that each of their axes defines a pitch angle greater than zero
degrees and less than ninety degrees with respect to the longitudinal axis of the
conduit;
a second section rotatably connected to said first section, said second
section having a plurality of wheels aligned parallel to the longitudinal axis of the
conduit; and
means for causing rotation of one of said first and second sections relative
to the other of said first and second sections;
wherein said relative rotation of said first and second sections provides
locomotive motion of the robot; and
~~The robot according to claim 1~~ wherein at least one wheel is moveable
between a first position in which all of said wheels on the same section contact
said conduit and a second position in which at least one of said of said wheels is
retracted.
8. (Original) The robot according to claim 7 wherein the retraction distance of said
at least one wheel is equal to at least one-third the diameter of the wheel.
9. (Original) The robot according to claim 8 wherein the retraction distance of said
at least one wheel is equal to at least one-half the diameter of the wheel.
10. (Original) The robot according to claim 8 wherein the retraction distance of said
at least one wheel is such that the diameter of the robot is decreased by at least 20
percent upon wheel retraction.
11. (Original) The robot according to claim 1 wherein said wheels have notched
traction surfaces.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

12. The robot according to claim 1 wherein at least one component of the robot has an outer diameter that substantially corresponds to the inside surface of the conduit and the robot includes at least one internal passageway that allows fluid to flow along the length of the robot without having to pass between said at least one component and the inside surface of the conduit.

13. The robot according to claim 1, further comprising at least two optical encoders.

14. The robot according to claim 1 wherein the robot is no more than six inches in diameter.

15. An autonomous robot for traversing a conduit comprising:

a body; and

a drive system capable of extracting energy from a flow of fluid through the conduit and using the energy to advance the body along the inside of the conduit, said drive system including at least one set of pitched wheels mounted on said body, each of said pitched wheels being positioned at a different point along the length of the robot;

wherein at least one component of the robot has an outer diameter that substantially corresponds to the inside surface of the conduit and the robot includes at least one internal passageway that allows fluid to flow along the length of the robot without having to pass between said at least one component and the inside surface of the conduit.

16. The robot according to claim 15 wherein said drive system includes a plurality of pitched wheels that are each positioned at a different point along the length of the robot.

17. The robot according to claim 16 wherein said pitched wheels are each positioned at a different point about the axis of the robot.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

18. The robot according to claim 16 wherein said pitched wheels define at least one helical row.

19. The robot according to claim 18 wherein adjacent pitched wheels are spaced 180 degrees apart about the axis of the robot.

20. (Currently amended) An autonomous robot for traversing a conduit comprising:
a body; and
a drive system capable of extracting energy from a flow of fluid through the conduit and using the energy to advance the body along the inside of the conduit,
said drive system including at least one set of pitched wheels mounted on said body;

wherein at least one component of the robot has an outer diameter that substantially corresponds to the inside surface of the conduit and the robot includes at least one internal passageway that allows fluid to flow along the length of the robot without having to pass between said at least one component and the inside surface of the conduit; and

~~The robot according to claim 15~~ wherein at least one wheel is moveable between a first position in which all of said wheels on the same section contact said conduit and a second position in which at least one of said of said wheels is retracted.

21. The robot according to claim 20 wherein the retraction distance of said at least one wheel is equal to at least one-third the diameter of the wheel.

22. The robot according to claim 21 wherein the retraction distance of said at least one wheel is equal to at least one-half the diameter of the wheel.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

23. The robot according to claim 22 wherein the retraction distance of said at least one wheel is such that the diameter of the robot is decreased by at least 20 percent upon wheel retraction.

24. The robot according to claim 15 wherein said wheels have notched traction surfaces.

25. The robot according to claim 15, further comprising at least two optical encoders.

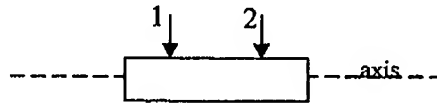
26. The robot according to claim 19 wherein the robot is no more than six inches in diameter.

Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

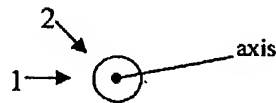
IX. EVIDENCE APPENDIX

In order to facilitate an understanding of the arguments presented herein the phrases used in the present claims are illustrated below:

- "along the length of the robot" refers to distance from one end of the robot as shown below



- "azimuthal position" refers to angular position around the axis of the robot, as shown below



Appl. No. 10/730,233
Appeal Brief dated March 13, 2006

X. RELATED PROCEEDINGS APPENDIX

None.